

## How Cyclone Nargis affected the natural environment

### Cyclone Nargis

Cyclone Nargis had a devastating impact on the coastal areas of Myanmar that it passed over, more specifically the Irrawaddy delta area. The southern coastal areas experienced rough seas, strong winds, heavy rain and 'modest' storm surges as Cyclone Nargis passed.

**Winds** gusting up to 259km/hr raced across the delta uprooting trees and tossing branches, rocks and coconuts around. Although very strong winds were responsible for much of the damage with Nargis, flooding and mudslides were also possible due to heavy rainfall. The destruction of coastal vegetation from the strong winds left exposed soil open to erosion.

**Torrential rain** pounded the surface, breaking up the turf and exposing the subsoil to erosion. Rainfall ranged up to 600 millimetres on the coast. The first area of 600-millimeter rainfall totals occurred over the open waters of the Bay of Bengal, as the storm was intensifying from a Tropical Storm to a Category 2 cyclone. Nargis weakened to Category 1 as it moved east-northeast toward Burma, but by May 2, it had re-intensified. The amount of rain was more than double the daily average. When the skies cleared on May 5, satellites observed widespread flooding over thousands of square kilometres.

**Storm surges** rolled over the low lying areas, flooding them with up to 3.5-4 metres of salt water. This killed salt intolerant plants and seeped down to contaminate aquifers. The storm hit at high tide, greatly increasing the impact of the storm surge. Tidal range in the Irrawaddy River delta is about 2metres between low tide and high tide, and the death toll would have been much, much lower had the storm hit at low tide. Further amplifying the storm surge's height was the fact that Nargis was moving rather slowly--about 30km/hr. Slow moving tropical cyclones can drive a much higher storm surge into narrow estuaries that connect to the ocean, since there is more time for the surge to penetrate inland. Nargis' track, forward speed, and high tide timing created a "perfect storm" able to cause an unprecedented storm surge in the Irrawaddy River delta. The only saving grace was the relatively small size of the cyclone. As the cyclone roared over the sprawling, crowded delta of the Irrawaddy River in Myanmar, the sea surged up to 11 kilometres, inland like a slow-motion tsunami, as up to 60 centimetres of rain fell.

**Flooding** occurred as a result of the rainfall and the storm surge. The storm's damage was concentrated over an area of about 30,000 square-kilometres stretching along the Andaman Sea and Gulf of Martaban coastlines. That stretch is home to nearly a quarter of Myanmar's 57 million people. Researchers concluded that Cyclone Nargis flooded about 14,402 square kilometers. (Most of the information for this has been gained by the use of satellite photographs as entry into Myanmar has traditionally been difficult).

**Enormous waves** are thought to have severely eroded coastal areas all along the southern coast of Myanmar. Some islets in the delta area disappeared completely. Marine habitats were damaged or destroyed. Cyclone Nargis generated wave heights of up to 9metres which crashed onto the southern coast of Myanmar causing coastal erosion.

As the cyclone passed on, winds and rains eased, sea levels fell and waves became less ferocious. The retreating sea most likely dumped sand along coastal areas which were rice farming regions.